ULYSSES OBSERVATIONS OF VARIOUS HYDROMAGNETIC WAVES

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A characteristic feature of the fast, high latitude solar wind is the continuous presence of large amplitude Alfvén waves. Although the waves are outwardly propagating, the observed field vector executes a random walk over a hemisphere whose pole is the radial direction and whose sense corresponds with the dominant field polarity, positive in the north and negative in the south solar hemispheres, The waves very effectively oppose the entry of galactic cosmic rays into the polar regions and cause the average field direction to depart from the parker field orientation. Magnetosonic waves have recently been identified in the interaction regions accompanying high latitude microstreams, one of the few positive identifications which are enabling studies of such waves in the solar wind, Ion cyclotron waves having a left-handed (ion) polarization and frequencies very near the local proton gyrofrequency are seen sporadically in association with the pick-up of interstellar ions. Their interrnittency and effect on the phase space distribution of the pick-up ions and the solar wind moments are of keen scientific interest, Recent observations and analyses of these various wave modes will be presented.

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